ESSAYS ON ISSUES
THE FEDERAL RESERVE BANK OF CHICAGO
MARCH 2009
NUMBER 260

Chicago Fed Letter

Why do firms use temporary workers?

by Yukako Ono, economist

This article explores the pros and cons of using temporary workers and their permanent counterparts. It examines firms' various motivations for using temporary employment, accounting for geographical and industry differences.

Between January 1990 and January 2006, temporary help services employment in the U.S. more than doubled, growing from 1.2 million to 2.6 million workers.

The use of temporary workers enhances labor flexibility for firms. Compared with permanent (indefinite-term) employment arrangements, temporary (fixed-term) employment arrangements allow firms to use labor for a shorter period without being responsible for workers' benefits or the costs associated with hiring or firing. Firms draw temporary labor from various channels—for instance, by hiring independent contractors and on-call workers and using workers from temporary help services (THS) agencies.

The use of such temporary workers is growing rapidly. It has also spread across industries—from manufacturing to services—and occupations, including construction workers, registered nurses, and information technology technicians. Between January 1990 and January 2006, THS employment in the U.S. more than doubled, growing from 1.2 million to 2.6 million workers, while total nonfarm employment grew by only 26%.[1]

Trade-offs for using temporary vs. permanent workers

Facing the ups and downs of labor requirements due to, say, fluctuating demand, firms can adjust the hours of permanent workers. When firms face a demand increase, they may ask their current permanent employees to work extra hours, rewarding them with a higher overtime hourly wage. However, firms can adjust labor hours only so far without increasing the number of workers.

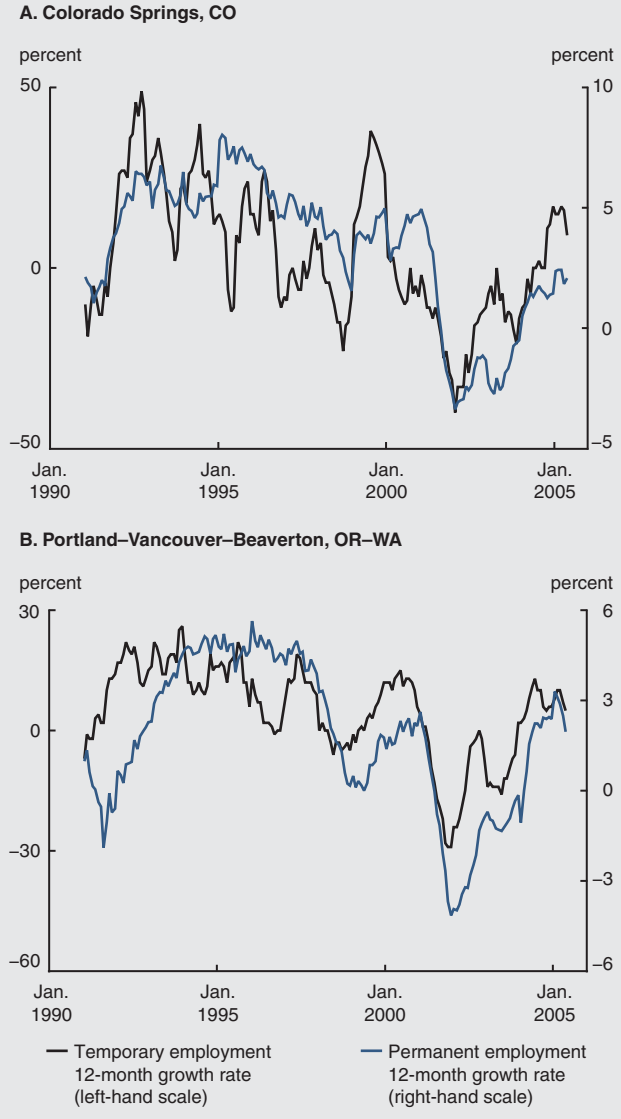
Adjusting the number of permanent employees incurs some costs to the firm. Hiring costs include those for advertising, screening, processing documents for new employees, and training; also, on-the-job training may disrupt previously trained workers' production. Firing costs could include mandated or voluntary severance payments. Some adjustment costs also result from government policies, such as mandatory advance notice of layoffs and the financing of mandated unemployment compensation. Many costs are implicit in the sense that they result in lower productivity and lost output. Without even including such implicit costs, however, some studies suggest that adjustment costs could be as much as one year of payroll costs for an average worker of a firm.[2]

In contrast to hiring and firing permanent employees, using temporary workers allows firms to adjust labor without adjustment costs. A firm can skip the recruiting process, including prescreening and basic training, by using THS agencies. When the temporary contract is terminated, a firm does not typically make a severance payment. However, some drawbacks also exist. Temporary workers are often considered less productive than permanent workers. Kilcoyne[3] shows that, for a given low-skilled occupation, temporary workers are paid lower hourly wages. This may reflect their lower productivity; for low-skilled jobs where experience or

reputation is not important for future employment, it may be difficult to motivate temporary workers to achieve a high level of performance because their efforts would not, typically, be rewarded by promotion or future wage increases. The legal limit of a temporary employment contract duration would also imply that temporary employment would not increase a worker's firm-specific skills and knowledge.[4]

In high-skilled occupations, temporary workers are often paid higher hourly wages than permanent workers (Kilcoyne, 2005). For example, on average, registered nurses sent by THS agencies earn an hourly wage that is $4.93 more than the national average for this occupation in 2004. Computer programmers sent by THS agencies earn $7.85 more per hour than those hired as permanent employees. For occupations in which past experience or licenses help firms identify workers' skills, firms would be able to select temporary workers who are qualified to meet a given performance level. Among workers with the same qualifications, however, they would not take temporary positions unless compensation for job insecurity is provided. Employers may also be willing to pay a premium to quickly meet, say, a sudden increase in demand.

1. Temporary and permanent employment growth rates



Source: Author's calculations based on data from the U.S. Bureau of Labor Statistics.

Labor flexibility

Empirical studies assessing to what extent firms use temporary or permanent workers to accommodate fluctuating labor requirements have been scarce. The data suitable to study such topics are limited, despite the growing interest by researchers and governmental agencies in understanding the rapidly increasing use of temporary workers. In particular, we know relatively little about the characteristics of firms using temporary workers. This is mainly because many employment data compiled by governmental agencies rely on payroll-based surveys, and temporary workers are typically not included on the payrolls of client firms. Nevertheless, a few studies exist. For example, using the W. E. Upjohn Institute for Employment Research's survey in 1999, Houseman[5] finds that a substantial fraction of firms reported using THS agencies to meet demand fluctuations while many also reported using them to screen workers.

Ono and Sullivan[6] use plant-level data from the U.S. Census Bureau's *Survey of Plant Capacity Utilization* (PCU), which has collected the number of temporary workers used by manufacturers since 1998.[7] Based on the 1998 and 1999 PCU surveys, Ono and Sullivan find that plants use temporary workers, in part, to accommodate flexibility in production; a plant more likely chooses temporary workers over permanent workers when it expects its output to fall over the next year. In such a circumstance, the cost savings from not adjusting permanent employees too frequently may justify the use of temporary workers. This effect remains significant after netting out the seasonal output factor, which itself had a positive relationship with the plant's use of temporary workers, as well as other variables including plant size, age, and industry-specific effects. Interestingly, they also find that plants facing greater uncertainty in their labor requirements, on average, use temporary workers more.

Other reasons firms use temporary workers

Ono and Sullivan (2006) also examine other motivations for a plant to use temporary workers. First, they find that manufacturing plants requiring high-skilled workers seem less likely to use temporary workers. As industry observers suggest, the wage premium or the margin paid to THS agencies for high-skilled temporary workers may be larger than that for low-skilled temporary workers (Kilcoyne, 2005). They also find that plants in a highly unionized industry seem to use temporary workers less often. Unions may be successful in resisting the use of nonmembers' labor; such an effect is also found in Houseman (2001). Larger plants seem to use temporary workers more, perhaps benefiting from cost advantages in negotiating with THS agencies. Larger plants may also be more likely to face greater penalties in the event of an unjust dismissal lawsuit by permanent workers. Finally, older plants seem to use temporary workers less. A plant's young age may reflect a greater

output uncertainty not captured by the average output fluctuation. Note that most of these variables are found to have no smaller effect than the plant's expected future output or the degree of uncertainty in its future output on the plant's tendency to use temporary workers or the share of temporary workers in a plant at a given time.

Timing to adjust temporary workers

THS employment growth often leads overall employment growth and is used as a leading business cycle indicator. Economists in business and government institutions monitor THS employment, along with other leading indicators, to better forecast economic activity. At the national level, Segal and Sullivan[8] find that THS employment growth leads aggregate employment growth by at least one quarter over a business cycle in the U.S. They also show that lagged THS employment growth improves the forecast of aggregate employment growth, even though THS employment is a small fraction of the overall economy. Similar facts are reported at the state level; in Texas, for instance, the lead period of THS employment growth is estimated to be five months.[9]

To study the detailed time-series nature of temporary and permanent employment adjustments, it would be ideal to have frequent data on the use of temporary workers. At either an industry or establishment level, such data are mostly available only at an annual frequency. At a more aggregate level, such as a city or national level, using the U.S. Bureau of Labor Statistics (BLS) data of *monthly* THS employment, we can study how the growth rates of temporary and permanent workers vary over time. In particular, Jin, Ono, and Zhang[10] find that the degree to which THS employment growth leads permanent employment growth varies across cities. Their analysis suggests that such cross-city variation reflects the cities' different mixes of industries, as well as their different output fluctuation patterns. Figure 1 shows the 12-month growth rates of both THS and permanent employment for Colorado Springs, Colorado (panel A) and Portland–Vancouver–Beaverton, Oregon–Washington (panel B). On average, THS employment growth rates seem to lead permanent employment in Portland, but such a relationship is weak in Colorado Springs. To examine how such cross-city differences can be explained, Jin, Ono, and Zhang (2007) first quantify the lead for each city by estimating a finite distributed lag model,[11] using the BLS city-level data available for 74 cities where the THS industry is large enough during their study period. The estimated equations allow them to examine how permanent employment growth evolves over a current and subsequent 12-month period in response to a unit increase in THS employment growth. They calculate a median lead, or the first time the cumulative adjustments reach or exceed half of the total adjustments.

The median lag estimated for these cities is, on average, 5.05 months, similar to the national level of the lead that Segal and Sullivan (1995) find. The extent to which temporary employment growth leads permanent employment growth varies a lot across cities; the standard deviation is 4.10 months. For example, Chicago and San Francisco experience temporary employment leads that are at the average of the cities included in the study. Los Angeles, Washington, DC, and Atlanta experience leads of as long as 12 months, while New York and Detroit experience only a one-month lead.

There are various reasons why temporary employment is adjusted earlier than permanent employment. Jin, Ono, and Zhang (2007) test a particular story that sheds light on how a firm infers whether a current change in demand is temporary or could persist for a while. In particular, in their model, a firm that experiences greater transitory volatility, on average, tends to hesitate more in adjusting its number of permanent workers. Such a firm adjusts temporary employment until it becomes certain that the change in demand will persist. In contrast, typically, a firm that faces a large long-lived shock, on average, may adjust the permanent employment level more quickly, since it is easier to identify a large long-lived shock of greater size. By regressing the city-level temporary employment lead on volatility measures of transitory and long-lived shocks (as well as other city-level variables), Jin, Ono, and Zhang (2007) find evidence supporting their view in some conditions.

Of course, various other stories could explain the difference between permanent employment and temporary employment adjustments. The firm's technologies of labor adjustment (Hamermesh and Pfann, 1996) may also influence such a difference. For example, using a plant-level longitudinal research database compiled by the U.S. Census Bureau, Caballero, Engel, and Haltiwanger.[12] find that lumpy and complete labor adjustments are more frequent among plants with larger shortages; this suggests that the adjustment costs per worker diminish when a firm adjusts a large amount of workers at the same time.

Conclusion

The use of temporary workers seems, in part, to facilitate flexibility for firms in adjusting labor. Some studies (e.g., Segal and Sullivan, 1995; and Katz and Krueger[13]) conjecture that the growth of the THS industry has increased the efficiency of the labor market search, making it possible for manufacturers and other firms to vary their output levels without running into bottlenecks due to difficulties hiring enough qualified

ISSN 0895-0164

workers. This, in turn, may have played a role in reducing the natural rate of unemployment during the 1980s and 1990s.

Aguirregabiria and Alonso-Borrego (1999) also present a similar finding in their study of labor market reforms in Spain. It is worth noting, however, that based on their analyses, the introduction of such temporary work arrangements in the labor market may have only negligible effects on firms' productivity, while the lowering of the adjustment costs for any type of workers may have a significant positive effect. As the use of temporary workers increases, more research on its effects on the macroeconomy will be necessary.

---

[1] These data were obtained from the U.S. Bureau of Labor Statistics' *Current Employment Statistics* (CES) survey of June 2007, available at http://data.bls.gov/PDQ/outside.jsp?survey=ce.

[2] D. S. Hamermesh and G. Pfann, 1996, "Adjustment costs in factor demand," *Journal of Economic Literature*, Vol. 34, No. 3, September, pp. 1264–1292.

[3] P. Kilcoyne, 2005, "Occupations in the temporary help services industry," *Occupational Employment and Wages, May 2004*, U.S. Bureau of Labor Statistics, bulletin, No. 2575, September, pp. 6–9.

[4] V. Aguirregabiria and C. Alonso-Borrego, 1999, "Labor contracts and flexibility: Evidence from a labor market reform in Spain," University of Toronto and Universidad Carlos III de Madrid, working paper, January.

[5] S. N. Houseman, 2001, "Why employers use flexible staffing arrangements: Evidence from an establishment survey," *Industrial and Labor Relations Review*, Vol. 55, No. 1, October, pp. 149–170.

[6] Y. Ono and D. G. Sullivan, 2006, "Manufacturing plants' use of temporary workers: An analysis using Census micro data," Federal Reserve Bank of Chicago, working paper, No. WP-2006-24, November.

[7] The manufacturing sector has been an increasing user of THS workers. THS industry observers report that, while THS agencies provided very few "light industrial" workers before the mid-1980s, such workers were a substantial part of THS agencies' business by the mid-1990s. At the same time, the prevalence of temporary layoffs by manufacturing firms declined significantly, suggesting the possibility of an increasing role of THS workers acting as a buffer to fluctuating labor needs.

[8] L. M. Segal and D. G. Sullivan, 1995, "The temporary labor force," *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 19, No. 2, March/April, pp. 2–19.

[9] R. Virmani, 2007, "Spotlight: Temporary employment, short-timers hint at trends in permanent jobs," *Southwest Economy*, Federal Reserve Bank of Dallas, No. 6, November/December, available at www.dallasfed.org/research/swe/2007/swe0706d.cfm.

[10] S. Jin, Y. Ono, and Q. Zhang, 2007, "Demand volatility and the lag between the growth of temporary and permanent employment," Federal Reserve Bank of Chicago, working paper, No. WP-2007-19, November.

[11] Specifically, they estimate the following equation where g_{kt}^{P} is a smoothed (11-month centered moving average) growth rate of permanent employment in city k, and g_{kt}^{T} is that of temporary employment:

$$g_{kt}^{P} = \alpha_{0k} + \beta_{0k} g_{kt}^{T} + \beta_{1k} g_{kt-1}^{T} + \beta_{2k} g_{kt-2}^{T} + \beta_{3k} g_{kt-3}^{T} + \ldots + \beta_{12k} g_{kt-12}^{T} + \varepsilon_{kt}.$$

Assuming that a firm's adjustment of permanent employment is lagged only up to 12 months, 12 lagged series of THS employment growth rates were included in the regression.

[12] R. Caballero, E. Engel, and J. Haltiwanger, 1997, "Aggregate employment dynamics: Building from microeconomic evidence," *American Economic Review*, Vol. 87, No. 1, March, pp. 115–137.

[13] L. Katz and A. Krueger, 1999, "The high-pressure U.S. labor market of the 1990s," *Brookings Papers on Economic Activity*, Vol. 30, No. 1, pp. 1–87.